

by Ben Ikenson

Rio Grande Silvery Minnow



Rio Grande silvery minnow
USFWS photo

*I*n contrast to some fish eggs that take months to incubate, Rio Grande silvery minnow (*Hybognathus amarus*) eggs hatch in about 24 hours into larvae that can swim in just 3 to 4 days. It is no surprise that a species so programmed for survival once dominated a biological niche that spanned 3,000 meandering miles (4,825 kilometers) from Colorado to Texas.

Now that habitat changes have brought the minnow to the very edge of extinction, its remarkable reproductive strategy is less favorable, largely because its eggs are semi-buoyant. They often drift down the Rio Grande until they are deposited into the deep and inhospitable waters of the 36,000-acre (14,570-hectare) Elephant Butte Reservoir, where we believe the eggs are consumed by predatory fish. In short, the minnow's biological proficiency does little to foster its survival in the modified world to which this fish desperately clings.

In 2000, the U.S. Fish and Wildlife Service initiated a silvery minnow egg salvage pilot project. Biologists from the Service, Bureau of Reclamation, and University of New Mexico collect minnow eggs as well as reproductively-ready adult minnows near Elephant Butte, where these efforts do not disturb upstream populations. Captured adult minnows are induced to spawn, either at the Albuquerque Biological Park or the Service's New Mexico Fishery Resources Office. Biologists then either return the resulting fish to the Rio Grande or hold them for captive propagation.

On May 10, 2001, after an increase in the river's flow (a natural spawning cue for the silvery minnow), biologists deployed devices that rescued more than 100,000 egg from the waters above Elephant Butte. The eggs were added to a captive population of silvery minnows at the Albuquerque Biological Park.

Steven Platania, a research biologist under contract to the Bureau of Reclamation, coordinated this year's egg collections. He says, "In addition to salvaging Rio Grande silvery minnow eggs for transport to refugia and use at breeding and rearing facilities, this year's work will provide important preliminary information on the timing and duration of spawning of the Rio Grande silvery minnow. We believe that in the future, monitoring the level of reproduction of this species will be paramount if we are to assess the success of planned reintroduction efforts."

Chris Altenbach, Assistant Curator of Fishes for the Biological Park, manages one of the captive propagation facilities that have proven instrumental in sustaining the species. "We hold a significant portion of the captive population here," he says. "Part of the success of the

captive rearing project has been the cooperation between the Fish and Wildlife Service and the city of Albuquerque, and the city is looking to continue funding these kind of efforts.”

Only in the past half century has the minnow's floating egg become its Achilles' heel. The species' steady decline coincided with flood-control and river channelization projects that began in the 1940s and eventually converted much of the Rio Grande from a wide, shallow, meandering river to a much narrower and deeper one fragmented by dams. The minnow's range likely ebbed as insulated oxbows and shallow pools gradually disappeared.

Today, as fertilized minnow eggs drift downstream, adult minnows cannot move upstream past the three diversion dams. Consequently, an estimated 90 to 95 percent of the minnow's population is believed to be in the 60-mile (96-km) portion of the river downstream of the San Acacia Dam. To make matters worse, this reach of the river is the one now most likely to run dry in any given year because of diversions for crop irrigation and other factors. For both minnow and biologist, the sum of these conditions can be daunting.

Soon after the minnow was listed as endangered in 1994, biologists began collecting and relocating minnows upstream as well as conducting minnow rescue operations when the San Acacia reach went dry. In the past, these efforts have been no more than desperate measures to stave off extinction. The idea of ferrying minnows from lower reaches of the river to higher reaches on a regular, ongoing basis is under debate. The balancing act will continue, but the eventual goal, of course, is to remove human hands from the picture so that the species can sustain itself.

“The recent collection of minnow eggs is a landmark accomplishment for the project,” said Service biologist Jude Smith, “but it fulfills only one aspect of recovery, which is to maintain the population of the species. In the end, these efforts will only be meaningful if

done in concert with habitat restoration and water quality improvements.”

Some of the improvements needed by the minnow are a sustained supply of water in the Rio Grande, solutions to the barriers to fish passage posed by dams, and a general restoration of riverine habitat, especially upstream of San Acacia Dam, to recreate historic conditions such as slow-moving, shallow water with a shifting, sandy bottom. With these improvements, the outlook for future generations of silvery minnows like those hatched from the recently rescued eggs will become more hopeful.

Although these endeavors may seem like a large price to pay for a tiny minnow, Smith says that “by trying to save the minnow, we are really working to save the river. The minnow is an indicator species that suggests the overall health, or sickness, of the entire river ecosystem.” If parts of the river dry up today, then not only does the minnow suffer, habitat is displaced for a number of species, from other fishes, to birds, beavers, and muskrats.

There is a saying in the Southwest: *agua es vida*, water is life. If a formerly abundant native species is barely hanging on in the Rio Grande, New Mexico's artery of life, there are obvious implications for the quality of life for all creatures, including people. Our goal is to improve conditions for not only the Rio Grande silvery minnow but all of us.

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